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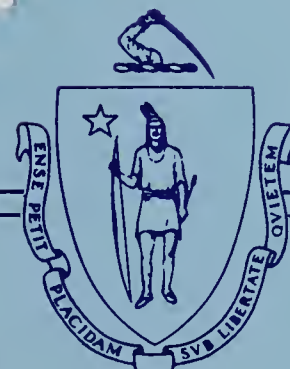
PROFILE

BRIEF



HERBICIDE APPLICATION
ON
RIGHTS-OF-WAY
IN
MASSACHUSETTS

091683



GOVERNMENT DOCUMENTS
COLLECTION

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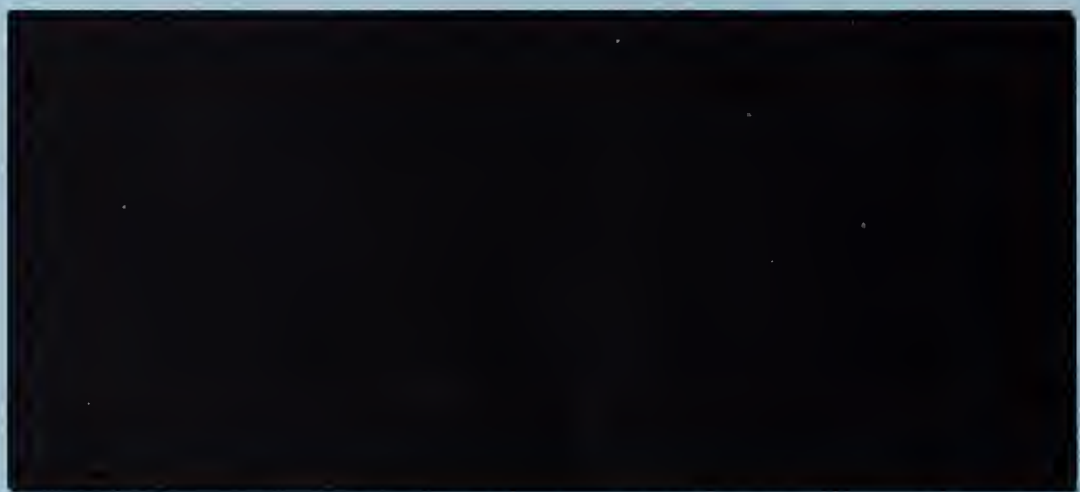
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ISSUE DEFINITION

Recent newspaper headlines have alerted the public about dioxin contamination in places such as Times Beach, Missouri, and New York's Love Canal. The newspaper accounts of the tragedies that happened at these places have initiated debate over the possibility that other areas of the country have been contaminated by dioxins. At the center of these concerns over dioxin contamination is the use of phenoxy herbicides. Phenoxy herbicides are chemicals that were developed to prevent the growth of, or to kill certain types of plants. Scientists have proven that a number of dioxins are created when phenoxy herbicides are manufactured. In fact, the general term dioxin is misleading because there are seventy-five different types.

Some groups have claimed that the use of phenoxy herbicides and the residual dioxins they contain have caused serious problems to human health and the environment. On the other hand, manufacturers and major users of herbicides have responded that these products are safe when properly used.

At the present time, phenoxy herbicides are used in Massachusetts for a number of purposes, including agricultural, forestry, and rights-of-way applications. However, the scope of this Profile Brief will be limited to a discussion of phenoxy herbicide use on Massachusetts electric utility rights-of-way (ROW), that is, the narrow strips of land over which electric transmission lines are constructed. The topic was chosen in response to a

legislative request made by a member of the Massachusetts General Court who asked the Legislative Service Bureau to collect information on the effects of herbicides on human health and the environment. Although other herbicide uses are excluded from this Profile Brief, it does not diminish the importance they play in the controversy surrounding the use of phenoxy herbicides and possible contamination from dioxin.

For purposes of example, one herbicide, 2,4-D, has been given considerable more attention than other herbicides in this Profile Brief. The herbicide 2,4-D refers to 2,4 - dichlorophenoxy acetic acid and its 35 derivative salt and ester forms.¹ Although there are a number of herbicides used on ROW, 2,4-D was chosen because it is the most commonly applied herbicide and the number of toxicological tests that have been made on its chemical properties. Applicators of 2,4-D use it to selectively kill broad-leaf plants. When 2,4-D is applied, it has the ability to kill certain vegetation, and at the same time leave different types of vegetation unharmed. Usually 2,4-D is preferred over other herbicides because of cost and effectiveness.² Other herbicides are used when vegetation shows a resistance to 2,4-D.

BACKGROUND

Dioxin is a colorless, crystal-like compound that is a by-product from the manufacture of phenoxy herbicides. Phenoxy herbicides are synthetic

¹"2,4,-D Fact Sheet," (Environmental Protection Agency: Washington); June, 1982, p. 1.

²The Phenoxy Herbicides, 2nd ed., Prepared by the Council for Agricultural Science and Technology. Report No. 77, August, 1978, p. 3.

organic compounds that have the ability to kill plants by causing malfunctions in plant growth. Typically, these herbicides are absorbed by plant foliage, roots, and soft stem tissues and move within the plant along the pathways that carry food and water.³ (See Table I).

One dioxin, 2, 3, 7, 8 - tetrachlorodibenzo p-dioxin, more commonly referred to as TCDD, has drawn considerable attention from the scientific community. Scientists are at a near unanimous opinion that TCDD is a potential cause of cancer and birth defects in laboratory animals. In fact, some scientists have called TCDD the most toxic member of the dioxin family.

However, scientists who have studied TCDD have failed to prove that it is injurious to human health. Tests do show that humans who have been exposed to TCDD generally contract a skin condition called chloracne or a liver condition called porphyria cutanea tarda.⁴ Several newer studies suggest that several organ systems might be sensitive to TCDD and that it can cause changes in skin color, numbness, and tingling in the arms and legs.⁵

One herbicide, 2, 4, 5, - Trichlorophenol, better known as 2, 4, 5-T, has been found to contain TCDD. This disclosure has caused

³The Phenoxy Herbicides, p. 4.

⁴Agent Orange: Veterans' Complaints Concerning Exposure to Herbicides in South Vietnam, Congressional Research Service, Dec. 28, 1981, p. 1.

⁵Jeremy Main, "Dow vs. the Dioxin Monster," Fortune, May 30, 1983, p. 85.

considerable alarm, especially about dioxins contained in other herbicides. In all fairness, it must be stressed that TCCD is not a contaminant of all phenoxy herbicides, and has only been identified in 2,4,5-T.

The herbicide 2,4,5-T was developed during World War II and registered for use in the United States on March 2, 1948. At the time of its development 2,4,5-T was considered an effective and safe herbicide used quite frequently for agricultural uses. Because of its chemical properties, it worked well with other herbicides, especially 2,4-D.

Health problems associated with human exposure to 2,4,5-T began surfacing in 1957. In that year, Dr. Karl Shultz discovered that human exposure to 2,4,5-T caused the skin condition chloracne. Although chloracne is not considered a serious condition, other studies have proven that there is a direct connection with dioxin contaminated phenoxy herbicides and an increased incidence of soft-tissue sarcomas, a rare form of cancer that affects the tissues of muscle, nerve and fat.⁶

At the present time, 2,4,5-T is restricted to certain uses by the Federal Environmental Protection Agency. The emergency ban on 2,4,5-T was made in response to an increased number of miscarriages near Alsea, Oregon, in 1979. Women in this area blamed the increased number of miscarriages on the forest spraying of 2,4,5-T. Despite a number of industrial tests that showed the miscarriages were not a result of 2,4,5-T spraying, the EPA declared that 2,4,5-T and a related herbicide, Silvex are dangerous to public health.⁷

⁶"Dioxin: A C & EN Special Issue," Chemical and Engineering News, June 6, 1983, p. 44.

⁷Federal Register, Vol. 44, No. 52, March 15, 1979, pp. 15874-15920.

The EPA issued a limited ban on the use of these herbicides on forests, rights-of-Way, lakes and ponds, and pastures. The EPA does not ban the use of these two herbicides on rice fields, non-pasture grazing land for livestock, and some non-agricultural uses.

After 2,4,5-T and Silvex were banned, scientists began to investigate other phenoxy herbicides for possible dioxin contamination. One herbicide 2,4-D has caused considerable controversy over its potential to effect human health. There are two reasons for the uncertainty about the safety of 2,4-D. First, the chemical composition is very similar to 2,4,5-T's composition, and secondly, because 2,4-D is so similar to 2,4,5-T, some people believe that it could contain TCDD. However, it must be stressed that toxic levels of TCDD have never been found in 2,4-D samples manufactured in the United States.

The herbicide 2,4-D is the most widely used phenoxy herbicide in the United States. According to the EPA, over 1500 products containing 2,4-D have been registered for use, and nearly 60 million pounds are used annually.⁸ Although tests have shown that 2,4-D does not contain TCDD, studies have indicated that 2,4-D does contain other less toxic dioxins. One of these dioxins is Hexa-dioxin (HCDD). Laboratory studies analyzing HCDD have shown that this dioxin is not as toxic as TCDD; but, it has produced toxic reactions in animals.⁹ Unfortunately, there has been little or no research done on these other dioxins.

⁸Wendell R. Mullison, Public Concerns About the Use of 2,4-D, Dow Chemical U.S.A., Agricultural Products Department, 1981, p. I.

⁹Assessment of Human Risk Associated With the Use of 2,4-D in Forestry Management, Minnesota Department of Health, p. XII-3.

TABLE I

CHARACTERISTICS OF PHENOXY HERBICIDES
USED ON MASSACHUSETTS ELECTRICAL
RIGHTS-OF-WAY

HERBICIDE	Dicamba	2,4,-D	Fosamine	Piclorum	Triclopyr
MAJOR REGISTRANT	Velsicol Chemical Corp.	Dow Chemical Company	Dupont	Dow Chemical Company	Dow Chemical Company
TRADE NAME	Banvel	Weedon LV-4	Krenite	Tordon Amdon	Garlon
APPLICATION METHOD	Cut Surface Injection	Foliar spray, backpack mist, sprayer, aerial application	Aerial broadcast Limited ground application	Spray Solutions, Pellets, Stem injections	Broadcast by low-volume ground spray equipment, or helicopter, high volume spray tree injection
ABSORPTION	Absorbed by roots or foliar tissues	Absorbed through leaves, stems, or	Absorbed by foliage, buds, and stems	Absorbed through roots and foliage	Absorbed through roots and leaves
AFFECT	Plant growth regulator that alters root and shoot development	Interferes with a growth hormone affecting normal growth	Interferes with bud development	Growth regulator	Affects plant cell structure
MOBILITY	Considered a mobile herbicide	Leaching depends on formulation, soil properties, and amount of rainfall	Low mobility herbicide	Mobility a function of soil type, pH, application rate, and rainfall	Classified as a mobile herbicide with mobility depending on soil type
MICELLANEOUS	Often combined with 2,4-D	Often combined with Dicamba, Piclorum, and Triclopyr	Relatively new herbicide, limited amount of information available	Often combined with 2,4-D and Triclopyr	Relatively new herbicide

Source: Environmental Fates and Impacts of Major Forest Use Pesticides.

PRO AND CON

Despite the number of scientific studies that have been performed on herbicides, there still remains uncertainty whether herbicides can cause damage to human health and the environment. Various doses given to laboratory animals have failed to show a precise conclusion that herbicides are dangerous or not. Because of the equivocal data that exists, both the opponents' and proponents' side must be carefully examined before any inference can be made about the toxicity of herbicides.

A. Proponents

Proponents advocating the use of herbicides believe they have played an important role in increasing the yield of agricultural produce and controlling hard to maintain vegetation. Manufacturers of herbicides have maintained all along that their products are safe and well tested before they are marketed. For example, Dow Chemical Company, manufacturers of 2,4-D, tests their output of this herbicide nine times every twenty-four hours to make sure that it is not contaminated with any deadly dioxins.¹⁰ By conducting these tests, Dow maintains that the risks from using 2,4-D is not as great as some people have claimed.

Other arguments favoring the use of herbicides include:

- 1) Dioxins have been naturally distributed through the environment long before herbicides were discovered.

In a report entitled, "The Trace Chemistries of Fire:
A Source of and Route for the Entry of Chlorinated

¹⁰Concern Grows On Dioxin As Scientists Work To Assess Its Harm To Humans, New York Times, June 23, 1983, p. 1.

Dioxins into the Environment," Dow Chemical Company argues that the combustion of a number of materials produce dioxins.

2. Despite the number of scientific tests made on herbicides, there still remains uncertainty whether herbicides pose a serious problem to the environment.
3. Herbicides are generally used in such diluted solutions that their toxicity is greatly reduced.
4. Scientists have failed to show unusual incidences of cancer, birth defects and reproductive problems from animal and human exposure to herbicides.
5. Herbicides do not cause damage to water supplies, food products and wildlife, fish or birds. Usually, forest animals increase in number when herbicides are used.

B. Opponents

Opponents of herbicide use dispute their counterparts' claims that herbicides are safe. The main arguments refute the validity of the tests performed by the proponents of herbicide use. They claim that advocates fail to study the one most important factor, namely the long-term low-level exposure to herbicides.¹¹

Three major studies that are quite frequently used to illustrate opponent views tested the toxicity of 2,4-D. One report recommended

¹¹Ruth Shearer, Testimony presented at an unknown Hearing on 2,4-D, April 24, 1981, p. 2.

that 2,4-D be restricted. Another report concluded that 2,4-D and Piclorum, a herbicide generally used with 2,4-D causes cancer and reproductive problems. The third report found that when 2,4-D is combined with other substances, it can become a promoter of cancer.¹²

Besides possible health effects, opponents also argue that herbicides upset the natural balance of the environment. They claim that when herbicides are used, the loss of vegetation deprives an area of its natural nitrogen source. Such a loss can effect the soil, fungi and insects of an area. Sometimes it becomes necessary to replace this natural nitrogen source with expensive urea -fertilizers.¹³

Other arguments against the use of herbicides include:

1. Herbicides persist in the soil, thereby increasing the chances of surface runoff which could lead to contamination of groundwater supplies.
2. Herbicide use is slowly destroying forests because tissues of connifer trees are being destroyed.
3. Studies have shown that herbicides are deadly to insects, birds, and wildlife populations.
4. Herbicides could accumulate in the tissues or organs of wildlife which could contaminate the

¹²Lewis Regenstein, America the Poisoned, 1982, p. 49.

¹³Regenstein, p. 39.

food chain.

5. Manual clearing is not only less expensive than herbicide application; but, it promotes new jobs and does not threaten human health or the environment.

UTILITY COMPANIES

In Massachusetts, several different types of herbicides are used by major electrical utility companies. (Please see Table II). On the average, Massachusetts utility companies will use one gallon of herbicide on an acre of ROW. Usually a herbicide will be applied to ROW every three years.¹⁴

Most electric utility companies use herbicides and manual cutting to control vegetation in and around ROW. Manual cutting is used in areas which are considered environmentally sensitive. Such areas are near drinking water sources and where agricultural produce is grown. Herbicides are used to control tall growing trees and wooded areas around the base of ROW, and to encourage low growing plants such as shrubs, ferns, wildflowers and grass.¹⁵ Tall trees growing under ROW pose serious problems. Sometimes a branch of a tree will touch the transmission lines causing a flashover arc shorting the system, and interrupting electrical service. Woody growths around the base of ROW restrict the access to transmission lines for inspection, maintenance and repairs.

For example, one utility company, Boston Edison Company maintains

¹⁴Telephone conversation with Rufin Van Bossuyt, System Arborist, New England Power Service Co.

¹⁵"Fact Sheet: Vegetation Management," Boston Edison Company, p. 1.

4,000 acres of ROW in forty cities and towns. To maintain their ROW, Boston Edison follows a vegetation management program that is designed to stop high plant growth and to encourage low-growing vegetation.¹⁶ According to Robert Little, Agronomist for Boston Edison, herbicides are used once every three years on a third of Boston Edison ROW. Usually one-half to three quarters of a gallon of herbicide is used per acre for vegetation management. This averages out to one ounce of herbicide per square foot. Unfortunately, the exact amounts of herbicides used by the various utility companies were not readily available. Boston Edison and several other utility companies have promised to tabulate this data for the Legislative Service Bureau. This data may be available from the Legislative Service Bureau at a later date.

Massachusetts electric utility companies apply their herbicides in one of three ways, basal spraying, selective stump management, or foliar spraying. Selective foliar spraying is used to control the growth of medium-sized hardwood trees. In this method, a herbicide is applied by a backpack sprayer and sprayed on leaves to stop future bud development. On smaller hardwood trees, basal spraying is used. Again, a herbicide is applied to the base or stem of a tree to curtail growth. Finally, larger trees are maintained by selective stump management. First the tree is cut down, and then a herbicide is applied to the cut area of the stump with a sponge, or by a small squirt bottle.

Aerial spraying, more commonly known as "Broadcasting", has caused considerable controversy, especially over the possible contamination

¹⁶Arthur H. Sharp, Remarks by Arthur H. Sharp before the Joint Committee on Natural Resources and Agriculture of the Mass. Legislature, October 21, 1982, p. 2.

from the drift of airborne particles of herbicides. This method was minimally used in Massachusetts from 1965 to 1971. However, aerial broadcasting of herbicides has not been used in Massachusetts since 1971.

TABLE II

PHENOXY HERBICIDES USED BY MASSACHUSETTS ELECTRIC UTILITY COMPANIES ON

RIGHTS-OF-WAY

Company	New England Power Co.	New England Electric Co.	Mass. Electric Co.	Western Mass. Electric Co.	Boston Edison Co.	Northeast Utility Co.
Herbicide						
2,4,-D	X	X	X			
Krenite	X	X		X	X	
Tordon-101	X		X			
Tordon-RTV					X	
Garlon 3-A		X	X			X
Garlon 4					X	
Banvel CST					X	

Source: Rufin Van Bossuyt, System Arborist, New England Power Service Co. and Robert H. Little, System Agronomist, Boston Edison Company.

LOCAL COMMUNITIES

Recently, local communities have become active in the issue of herbicide use on ROW. Under the authority of Chapter 111, Section 31 and Chapter 131, Section 40 of the Massachusetts General Laws, several cities and towns have banned the use of herbicides in their community, or have required applicators to obtain special use permits. (See Table III).

On May 11, 1983, the Attorney General issued an Opinion relating to local Board of Health Regulations restricting herbicide use on ROW in their community. Central to this Opinion was the question whether local regulations are pre-empted by Chapter 132B, Section 6B and Chapter 166, Section 27 of the Massachusetts General Laws.

Chapter 132B, Section 6B, requires electric utility companies to notify cities and towns twenty-one days before spraying begins. Each applicator must provide information on the spraying date, the chemical that will be applied and the name and address of the applicator. Under the purview of Chapter 166, Section 27, the Department of Public Utilities has the authority to approve or disapprove local regulations regarding the maintenance of an electrical transmission line.

In his Opinion, the Attorney General declined to comment on the question of Chapter 132B, Section 6B pre-empting local Board of Health Regulations. However, the Attorney General ruled that "the DPU has no authority under General Laws, Chapter 166, Section 27, to disapprove local Board of Health regulations affecting utility company rights-of-way and that such regulations may therefore be enforced by municipalities without DPU approval."¹⁷

¹⁷Francis X. Bellotti, "Opinion", Department of Attorney General, May 11, 1983, p. 2.

TABLE III
LOCAL COMMUNITIES

City or Town	Special Permit	Written Application	Other	Comments
Acton	X			
Barnstable		X		Spraying is prohibited within 400 ft. of a water supply; 100 ft. of any watercourse; 300 ft. of any property line.
Bourne	X			Agricultural users are exempt from obtaining special permits.
Brewster			X	Herbicides are prohibited along easements, rights-of-way, railroad and power lines.
Chatham	X			Herbicides are prohibited within 400 ft. from any water source.
Dennis			X	Public Utility companies are prohibited from using herbicides on rights-of-way until new regulations are promulgated.
Eastham		X		Require test proving herbicide will not create a public health hazard.
Easthampton			X	Herbicides for non-domestic or non-agricultural uses are banned.
Harwich			X	Prohibits defoliants along power lines within 500 ft. of private wells, watercourses and areas of human habitation.
Mashpee			X	Prohibits use of herbicides along rights-of-way.
Norfolk			X	Bans the use of Tordon RTV or Garlon, Krenite may be used when mechanical means are not feasible.
Orleans			X	Prohibits use of herbicides along easements, rights-of-way, railroad and power lines.

TABLE III (Continued)

City or Town	Special Permit	Written Application	Other	Comments
Plymouth	X			
Randolph	X			Requires an emergency spill response plan.
Sandwich		X		
Truro		X		
Wellfleet			X	Prohibits use of herbicides along easements, rights-of-way, railroads, and power lines.
Weymouth	X	X		Requires emergency spill plan be filed with initial application. Special permit limits herbicide use within 100 ft. of drinking water source.
Yarmouth			X	

Source: Telephone Survey conducted by Suzanne Connor and Paul Tracy, interns at the Legislative Service Bureau.

LEGISLATIVE ACTIVITY

Several bills concerning herbicide use on ROW were filed for the 1983 legislative session. These bills include:

<u>Bill No.</u>	<u>Description</u>	<u>Status</u>
S1193	Petition for legislation relative to the use of herbicides by public utility companies.	6/14/83 - Ought Not To Pass. Report Accepted.
S1263	Petition for legislation to further regulate the application of herbicides.	7/28/83 - Ought Not To Pass.
H4428	Petition relative to the application of pesticides for agricultural purposes.	5/4/83 - Ought Not To Pass. Report Accepted.
H4429	Petition for legislation to allow the owner or resident of real property to designate such property for exclusion from the application of pesticides.	6/2/83 - Discharged to the Committee on Ways & Means. 6/6/83 - Senate Concurred.
H4430	Petition relative to the aerial application of pesticides for non-agricultural purposes.	6/2/83 - Discharged to the Committee on House Ways & Means.
H4431	Petition relative to the ground application of pesticides for non-agricultural purposes.	6/2/83 Discharged to the Committee on House Ways & Means.

REGULATIONS

Massachusetts has not promulgated permanent regulations governing the use of herbicides on ROW. However, the State Department of Food and Agriculture's Pesticide Board issued interim guidelines for herbicide use on ROW. (See Appendices I). Currently, the Secretary of Environmental Affairs has undertaken the preparation of a Generic Environmental Impact Report (EIR). The EIR will evaluate present vegetation management programs in Massachusetts and make recommendations for future regulations governing herbicide use on ROW.

FEDERAL LEGISLATIVE ACTIVITIES

Three federal laws were enacted to regulate pesticide use. The term pesticide is a general classification to describe chemicals used to control pests. Under Federal law, herbicides are designated a pesticide and are regulated by these laws. However, these laws do not directly regulate herbicide applications on ROW.

Basically, the three laws were enacted to insure that these substances are safe to use. The following is a brief summation of the three laws and legislation currently before Congress.

Federal Insecticide, Fungicide and Rodenticide Act of 1947

Law was enacted to protect farmers from these products used in agricultural production. The important feature of this law is that it created a regulatory authority called "registration". Under the registration process, a chemical must demonstrate that it is safe to use before it can be marketed.

Federal Environmental Pesticide Control Act (PL 92-516)

Law was enacted to protect human health and the environment from pesticides. This legislation rewrote FIFRA, and provided for direct controls on the use of selected pesticides; classification of pesticides into a restricted use category; registration of manufacturing plants; the creation of a national monitoring program for pesticide residues; and the addition of health and environmental data in the registration process.

Federal Pesticide Act of 1978 (PL 95-396)

The 1978 Pesticide Act redefined the 1972 registration and classification procedures and gave state governments the responsibility to enforce laws and regulations regarding herbicide and other pesticide applications.

Other legislative activities pending before the Congress include H.R. 2799 (Weaver) which defines the conditions for use of phenoxy herbicides on Federal lands managed by the Bureau of Land Management or by the United States Forest Service. It was introduced on April 27, 1983; referred to more than one committee; and on May 17, 1983 Hearings were held before the Subcommittee on Mining.¹⁸

¹⁸James Aidala, Pesticide Regulation: Current Issues, Congressional Research Service: Washington, D.C., June 24, 1983, pp. 1-7/

STATE SURVEY

In August, 1983, the Legislative Service Bureau conducted a selected telephone survey of twenty-five states. (See Table IV). The survey was undertaken to identify states that have passed laws or promulgated regulations governing herbicide use on ROW. Each state's Department of Agriculture was contacted and an appropriate staff member was asked two questions:

"Has your state passed laws or regulations governing herbicide application on ROW?"

"Does your state restrict the application of any herbicide?"

At the time this Issue Profile was published, the Legislative Service Bureau received thirteen responses to the survey. Nine states responded that legislation was passed concerning herbicide application on ROW. Each state that passed a ROW herbicide law also required some type of notification before herbicides are applied to ROW. Two of these states requiring notification allow local governments to restrict herbicides within their communities. Four states responded that they restrict the use of certain phenoxy herbicides. However, these restrictions were made to protect certain agricultural products and not because of human health problems.

Based on the responses to the survey, it can be concluded that the use of phenoxy herbicides and their application on ROW has received attention at the state level. The responding sample represents 52% of the states surveyed. Out of this 52%, 69% of the states responded

that some type of law or regulation had been passed. If these figures are representative of the country as a whole, almost seven out of every ten states, or thirty-five states could have passed some type of law or regulation governing herbicide application on ROW. Copies of these laws, as well as any other information that was used in the preparation of this Issue Profile is available for inspection by Members of the General Court at the Legislative Service Bureau, Room 527A, State House, Boston, MA. - (617) 722-2520.

TABLE IV
STATE SURVEY

RESPONDEE	ROW	NOTIFICATION	RESTRICTED	LOCAL	COMMENTS
COLORADO					Currently, no laws or regulations have been passed.
FLORIDA					Currently, no laws or regulations have been passed.
GEORGIA					Currently, no laws or regulations have been passed.
IOWA	X	X	Piclorum		
LOUISIANA	X	X	2,4-D	X	Regulations govern aerial applications.
NEW YORK					Currently, no laws or regulations have been passed.
MAINE	X	X			
NEBRASKA	X	X			
OKLAHOMA	X	X	2,4-D	X	No aerial spraying. Special permits can be obtained to use phenoxy herbicides
TEXAS	X	X	2,4-D		
VERMONT	X	X			Hearings on use of 2,4-D & Piclorum are currently being held.
WEST VIRGINIA	X	X			
WISCONSIN	X	X			



The Commonwealth of Massachusetts

Department of Food and Agriculture

Leverett Saltonstall Building, Government Center

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October 15, 1982

Interim Guidelines Relative to the Use of Herbicides to Control Woody Vegetation on Railroad Layouts and Right-of-Ways in Massachusetts

Introduction

Over the past several months many state and local officials as well as the general public have expressed a need for further guidance relative to the protection of private and public water supplies from potential contamination resulting from the application of herbicides on railroad layouts and on right-of-ways. Although the best available information indicates that it is unlikely that significant residues will migrate to waters used for human consumption as a result of proposed applications when these herbicides are used in accordance with label directions, the following guidelines are offered as further safeguards in recognition of the obvious necessity of maintaining the quality of our drinking water.

Please note that these guidelines specifically address applications intended to control woody vegetation. Guidelines addressing applications to control all vegetation in and adjacent to the ballast area can be found in the Interim Guidelines Relative to the Use of Herbicides on the Ballast Area of Railroad Layouts in Massachusetts.

Purpose and Method of Application

In Massachusetts weed control on these areas is generally a selective operation. In other words, herbicides are not broadcast over the entire area to kill all vegetation. Rather they are applied to only those tree species which may interfere with normal functioning or servicing. Proper application should encourage growth of vegetation that does not represent a threat to service or function (i.e., shrubs, ferns, grasses and wildflowers) and thus reduces, through competition, the occurrence of those species which must be controlled.

The methods that are usually used to control vegetation in these areas are foliar, stump and basal applications.

The following herbicides are registered for such uses in Massachusetts and have been in use over the past few years. Note that other materials may be properly registered for this use but are not listed here because they have not been commonly used recently in Massachusetts:

- ammonium sulfamate (Ammate*)
- dicamba (Banvel*)

- 2,4-D
- fosamine ammonium (Krenite*)
- picloram (Tordon*, Amdon*)
- triclopyr (Garlon*)

* denotes trade name.

Use Guidelines Relative to Public Water Supplies

1. No application of herbicides should be made within the protected area surrounding a well used as a water supply (generally 250 ft. for tubular wells or 400 ft. for gravel packed wells).
2. No application of herbicides should be made within 400 feet of a surface supply or tributary or well used for public water supply with the exception of products containing fosamine ammonium (Krenite*).
3. Products containing fosamine ammonium should be the material of choice in areas within 400 feet of surface water supplies or tributaries or wells used for public water supply. No applications should be made within 50 feet of such areas.

Use Guidelines Relative to Private Wells Used for Water Supply or Irrigation

Where private wells used for water supply or irrigation can be identified and markings can be placed so that the contractor can take avoidance actions, no spraying should be done within 100 feet of such wells with the exception of products containing fosamine ammonium which could be used within 50 feet.

General Use Guidelines

1. Special care should be taken when operating in areas adjacent to crop lands, gardens and residences. No foliar application should take place within 50 feet of these areas unless there is significant intervening vegetated barrier.
2. When using foliar applications a drift inhibitor should be used.
3. No application should be made during rain. Every effort should be made to anticipate rain and operation should be suspended before rain actually occurs.
4. No applications should take place during wind conditions that may cause drift.
5. An effort should be made to provide a person whose purpose is to precede the application crew and identify sensitive areas to the applicators.

Please Note

These interim guidelines to control woody vegetation are intended to address current concerns relative to the application of herbicides on railroad layouts and rights-of-way and offer further safeguards beyond those which presently exist. A comprehensive review has been initiated and it is expected that more definitive guidelines will be available before the next application season.

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